

Research, Development and Extension plan 2017-2025



The Australian Wine
Research Institute

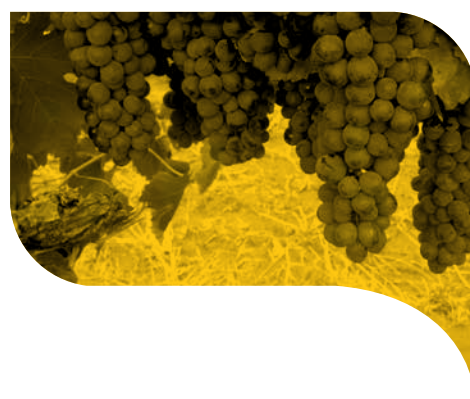


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About this document

This document presents a plan for the Research, Development and Extension (RDE) activities of the Australian Wine Research Institute (AWRI) from 2017–2025.

It replaces and builds on the achievements of the AWRI's 2013–2018 RDE plan.

The plan's principal aim is the conduct of RDE that leads to timely, relevant and valuable outcomes for the Australian wine community.

Photography by Jacqui Way, Eric Wilkes and PIRSA.

Introductory message

Wine Australia and The Australian Wine Research Institute (AWRI) are pleased to present this vision for the activities of the AWRI to 2025.

Wine Australia and the AWRI exist to support the profitability of the Australian grape and wine community. Essential to that goal are research, development and extension (RDE) and associated support activities which underpin quality and competitiveness, support innovation, maximise trade opportunities and enhance the global standing of Australian wine.

Wine Australia operates under a five-year strategic plan which sets out priorities for industry's precompetitive RDE investments and, in turn, the strategic RDE priorities for the AWRI. This plan outlines those strategic priorities, areas of focus and target outcomes to be addressed in and through the AWRI.

The selection of priorities and the approach to be taken in this plan was guided by Wine Australia, the AWRI's industry-elected Board, several industry consultations and surveys, the priorities of the Australian Government, exploration of new scientific opportunities, the priorities and achievements of prior AWRI RDE plans, and an analysis of the strengths and activities of other RDE institutions working in grape and wine.

The priorities will see the AWRI continue to concentrate its efforts in long-standing areas of strength – grape and wine excellence and performance, market access and extension and adoption – while making useful contributions in resource management and sustainability and pest and disease management.

The full suite of activities to be conducted by the AWRI from 2017 to 2025 is outlined in this plan. These activities will attract investment from a range of sources. However, the plan has been deliberately formulated to align the Australian grape and wine community's peak investor (Wine Australia) and peak RDE agency (AWRI). The accompanying Wine Australia

investment arrangements are similarly designed and reflect producers' expectations that the two organisations think and act as an integrated team.

This plan and the associated investments will enhance the AWRI's role as both an integral part of the Australian grape and wine community and an internationally recognised centre of excellence which contributes to the global reputation of the Australian wine category. The plan will allow the AWRI to:

- fulfil its mission and objects
- receive a level of certainty from long-term funding
- attract and retain the best minds for the long-term benefit of the sector
- have an independence and freedom to operate that allows it to capitalise on its intellectual capabilities and partner with other organisations as necessary to achieve outcomes for the grape and wine community
- pursue an appropriate blend of fundamental and applied research

- minimise administrative activities and direct as much as possible of the available investment to value-adding activities.

Wine Australia and the AWRI commit to continuing to operate in an atmosphere of close collaboration and cooperation, reflecting their common goal of supporting a prosperous Australian grape and wine community.

The primary aim of this plan is to conduct RDE activities that lead to timely, relevant and valuable outcomes for producers. The Boards of Wine Australia and the AWRI commend this plan as an important component of the long-term success and sustainability of the Australian grape and wine community.

Brian Walsh
Chair, Wine Australia

Louisa Rose
Chair, The Australian Wine Research Institute





Putting industry first Planning for sustainability, profitability and innovation

The AWRI is governed by an industry-elected Board and interacts with Australian grape and wine producers on a daily basis. Informed by the priorities in the Wine Australia strategic plan and a targeted industry and peak body consultation exercise, the AWRI set out to articulate the significant industry opportunities and challenges for it to address through to 2025.

Australia is making some of the best wines it has ever made, at all price points, and export figures suggest that the world is taking notice. The Australian grape and wine community is hungry for strategies to continuously improve quality, understand region and site, improve competitiveness and communicate Australia's wine offering to the world.

Changing consumer preferences, currency fluctuations, evolving regulations, intense international competition, reduced water availability, climate variability, an increased

focus on the role of wine in society and increasing competition for agricultural land have played, and will continue to play, a significant role in the sustainability of the sector.

There is an important role for the AWRI in conducting the precompetitive research, development and extension activities required to capture many of these opportunities and address many of these challenges, and thus in improving the profile and profitability of the sector. In developing this plan, more than 100 project ideas were identified and then refined to a final list of five themes and twenty-one subthemes. Projects under each subtheme will be developed and refined through Annual Operating Plans.

The consultation process is ongoing and does not cease with the publication of this plan. Industry feedback is welcomed and actively sought.

Structure of the plan at a glance

Theme	Subtheme
1 Customers, consumers and markets	1.1 Improving understanding of customers and consumers 1.2 Informing stakeholders about health and safety aspects of wine 1.3 Supporting market access, safety and regulation 1.4 Enhancing and protecting the reputation of Australian wine 1.5 Supporting best practice agrochemical use in Australian viticulture 1.6 Preserving quality and integrity
2 Extension, adoption and education	2.1 Facilitating awareness and adoption of research outcomes 2.2 Supporting stakeholder technical needs 2.3 Supporting wine industry education and development
3 Performance, products and processes	3.1 Improving products, processes and packaging 3.2 Understanding fermentation for uniqueness and improved performance 3.3 Providing objective measures of grape grading and wine style 3.4 Minimising taints and faults
4 Environment, sustainability and natural capital	4.1 Adapting to climate challenges 4.2 Improving environmental performance 4.3 Understanding Australia's grapevine resources 4.4 Understanding grape and wine provenance and quality 4.5 Delivering effective biosecurity, pest and disease management
5 Foundational data and support services	5.1 Providing efficient administration and management 5.2 Delivering research support and accredited analytical services 5.3 Monitoring winegrowing trends and production practices

Key directions 2017—2025

Build on the past and reorient for the future

This plan builds on the priorities and achievements of the 2013-2018 AWRI Research, Development and Extension plan and shifts the emphasis and direction of future RDE where needed to align with current priorities and feedback. The development of a new operating paradigm between the sector's main investor and RDE institution makes for a highly productive RDE environment.

Underpin premiumisation

Many planned projects will assist with continuous improvement in Australian fine wine and communication of Australia's fine wine message to the world. These projects include a better understanding of the drivers of Australian regional differentiation, provenance and quality and an improved understanding of wine flavour and texture.

Enhance competitiveness

Other projects will assist in making Australian producers competitive at multiple price points in the international marketplace. This includes smarter ways of working; generating solutions to challenges that are particularly relevant to Australia, such as adapting to a variable climate (bushfires, vintage compression); and continued efforts towards commercial use of objective markers of grape grade/style.

Harness 'omics technologies

Much has been achieved using 'omics technologies in recent years and next generation genome sequencing platforms are now readily available to AWRI researchers. Projects in this plan will draw on 'omics tools to deliver practical solutions for identifying, understanding, and managing pests and diseases; novel bacteria and yeast strains; and grape varieties and clones.

Optimise transport and packaging practices

Manufacturing, storage, packaging and transport practices in the Australian wine sector continue to evolve. This plan will evaluate these practices and recommend quality assurance approaches where appropriate.

Support sustainability

This plan will increase the AWRI's focus on sustainability, including biosecurity management activities and support for widespread adoption of the Australian wine sector environmental assurance program and its integration into market access and market development strategies.

Exploit advances in information technology

To keep pace with advances in information technology, this plan offers new ways to store, access and publish information, exploiting faster broadband networks and smart use of data. It will include new apps, such as that developed for the popular 'Dog book', and a range of extension activities based on digital platforms.

Pursue collaboration to achieve results

This plan seeks to achieve a large number of outcomes. In some cases, the AWRI will act as the lead agency, while in others the AWRI will play a supporting role to other lead agencies. The plan is designed to make best use of both the AWRI's core capabilities and partnerships with Australian and international research organisations and industry collaborators.

Centralise capability to offer national 'R', regional 'D' and more efficient, local 'E'

This plan is aligned with Australian government priorities and industry requests in proposing nationally relevant research activities at the AWRI hub in Adelaide to maximise efficient use of infrastructure and maintain critical mass; regionally relevant development where possible, including through the Regional Program and regional nodes; and locally relevant extension through regular roadshows, personal contact and enhanced use of electronic media. These initiatives will work towards a harmonisation of Wine Australia and AWRI extension capability and an overall increased emphasis on extension and adoption.

Deliver valued services

At grassroots level, the Australian wine community primarily engages with the AWRI through a number of major platforms, including the troubleshooting helpdesk, the library, regional extension platforms, AWRI Commercial Services, the AWRI website and education events such as the Advanced Wine Assessment Course and the Australian Wine Industry Technical Conference. These highly valued platforms will be continued, along with the background technical expertise base that they rely upon.

Respond in an emergency

This plan ensures that the AWRI retains its technical and human resources capability and capacity to respond to emergencies that have a direct effect on Australia's grape and wine sector.

Priority themes and target outcomes



Our industry is well versed in where we've come from but facing us all is the challenge the future holds. Thankfully we have the AWRI at the vanguard of research and information dissemination.

— *Iain Riggs, Brokenwood Wines*

Theme 1 — Customers, consumers and markets

The AWRI
2017–2025

The Australian wine industry depends on producing wines that consumers value, trust and are able to access in both domestic and international markets. Projects under this theme aim to take a scientific approach to understanding consumer preferences; to inform consumers about health and safety impacts of wine consumption; to provide technical guidance on agrochemical use to meet export market requirements; to provide technical support for market promotion activities; to preserve the integrity and quality of Australian wine; and to contribute technical expertise to national and international forums on wine regulation.

Subtheme	Target outcomes
1.1 Improving understanding of customers and consumers	Insights from research in established and emerging markets into customers' preferences, perceptions, behaviours and decision-making An improved understanding of customer satisfaction, through assessing the sensory experience in different situations (e.g. when consumed with food) and determining how differences in individuals' perceptions influence wine preference An improved understanding of the drivers of wine purchase and how to influence them, and the extrinsic and intrinsic property preferences of fine wine/luxury consumers Faster or more accurate methodologies for assessing sensory attributes and preferences
1.2 Informing stakeholders about health and safety aspects of wine	Science to support an informed and balanced debate on wine and health Relevant information to allow customers and consumers of Australian wine to make informed consumption choices Objective information on health and safety aspects of wine for policy makers
1.3 Supporting market access, safety and regulation	Accurate, timely and appropriate technical information to support negotiations for improved market access, including identification and effective management of technical market barriers A sound evidence base for international and Australian regulators to make decisions regarding Australian wine A consistent and robust dataset of the compositional trends of Australian wine
1.4 Enhancing and protecting the reputation of Australian wine	Trade and consumer educational activities that enhance and protect the reputation of Australian wine Participation of AWRI staff in Wine Australia's in-bound visitor programs and in-market educational activities Communication of Australian wine sector innovation, quality and integrity credentials to customers and consumers
1.5 Supporting best practice agrochemical use in Australian viticulture	Accurate, timely and appropriate technical information to support negotiations for improved market access, including identification and effective management of technical market barriers Improved practices for sustainable management of pests and diseases Benchmarking of spray practices and collaboration with chemical suppliers to evaluate new spray products Preparation, maintenance and distribution of the Agrochemical 'Dog book' and associated electronic resources Continued convening of the Agrochemical Reference Group Maintenance and distribution of up-to-date information on all agrochemical regulations of relevance to Australian wine and its export markets Collation and assessment of agrochemical residue data to monitor compliance with MRL levels Support, where needed, for the registration process for key agrochemicals for use in viticulture
1.6 Preserving quality and integrity	New and enhanced technologies to improve vineyard and winery efficiency and performance Knowledge that allows grapegrowers and winemakers to capture, enhance and preserve terroir through optimised winemaking practices Ability for Australian wine to reach the market in optimal condition and quality

Theme 2 — Extension, adoption and education

The value of research and development is only realised in industry when outcomes are effectively and efficiently implemented by practitioners. For this to occur, both extension and support for adoption are required. Projects under this theme apply a range of proven mechanisms to communicate research outcomes, solve industry problems, provide access to relevant technical resources, educate and train students, foster industry adoption and bridge gaps between research and practice.

Subtheme	Target outcomes
2.1 Facilitating awareness and adoption of research outcomes	- A clear pathway to market for R&D - A range of delivery networks and programs to disseminate R&D outcomes and encourage the adoption of new technologies and practices - Clear and effective communications with stakeholders - Availability of timely, fit-for-purpose, accessible and appropriately targeted wine sector information and analysis through a range of channels - Partnerships with wine sector organisations to enhance the adoption of R&D outcomes - Inclusion of pathways to extension and adoption in the planning of research projects - Strong support for extension events, as demonstrated by user participation and feedback - Regular measurement of levels of understanding and adoption of R&D outcomes - Increased awareness of RDE activities and outcomes by stakeholders - Staging of national extension programs (e.g. seminars, workshops and webinars) - Staging of Australian Wine Industry Technical Conference events for the benefit of the entire grape and wine community - Communication of all relevant R&D outcomes - Trials of new platforms and if appropriate integration of them into ongoing communication activities - Availability of user-pays consulting services where needed to facilitate adoption - Relevant digital tools/apps

The AWRI is indeed unique in the world of wine and an incredible asset that puts high quality, reliable and, in fact, cutting edge information at the winemakers' fingertips.

— Tom Carson, Yabby Lake Vineyard

Subtheme	Target outcomes
2.2 Supporting stakeholder technical needs	Clear and effective communications with internal and external stakeholders Maintenance of effective two-way dialogue and understanding with national, state and regional representative bodies Promotion of and support for the adoption of research outcomes Continued partnerships through the Regional Program to deliver extension and practical trials that encourage adoption of research findings. Delivery of measurable gains to the region(s) involved in regional RDE projects Specialised technical troubleshooting and helpdesk support for grape and wine producers State and regional technical support that is tailored to local needs and aspirations Assistance in the design and conduct of regional trials Evaluation of new and existing technologies, materials and processes and provision of support for their adoption where appropriate A relevant and growing AWRI library catalogue accessible by industry personnel and researchers Centralisation of historical technical resources Provision of proactive advice and technical support for modern trends such as that towards unfiltered, higher pH, minimal addition wines Availability of technical support for any industry emergency (e.g. biosecurity, smoke taint and agrochemical issues)
2.3 Supporting wine industry education and development	Contribution to developing the leadership and personal skills of the next generation of wine sector leaders Staging of professional development programs such as Advanced Wine Assessment Courses and Research to Practice workshops Involvement of researchers in educating and mentoring the next generation of producers and researchers Staging of Australian Wine Industry Technical Conference events for the benefit of the entire grape and wine community

The AWRI provides essential services to our industry, and is a key resource to solve technical challenges.

— Dan Buckle, Chandon Australia

For over 60 years the AWRI has supported the Australian wine industry by providing relevant outcome-based research, development and innovation that has real and timely industry applications.

— Richard Angove, Angove Family Winemakers

Theme 3 — Performance, products and processes

There are numerous processes involved in wine production, from grapegrowing through to delivery of finished product to consumers. Projects under this theme aim to optimise these processes and reduce costs, resulting in overall improvements to wine quality and business sustainability. Specific areas include target setting and objective measures for grape quality and wine style, optimisation of primary and secondary fermentation, assessing new winery processes and equipment, preventing and treating taints and faults and achieving a greater understanding of wine flavour and texture.

Subtheme	Target outcomes
3.1 Improving products, processes and packaging	- Knowledge on new and better ways of growing grapes and making wines - Knowledge that allows grapegrowers and winemakers to capture, enhance and preserve terroir through optimised winemaking practices - New and enhanced technologies to improve vineyard and winery efficiency and performance - Evaluation of new and existing technologies, materials and processes and provision of support for their adoption where appropriate - Continued improvement in understanding of the drivers of aroma, flavour, taste and texture and how they are affected by various viticultural and winemaking inputs - An improved toolbox for creation of target wine styles, including wines with lower alcohol and SO₂ - Vineyard and winery production processes to enhance product premiums or reduce cost, with a focus on the areas of greatest impact, such as cold stabilisation, ageing, storage and packaging - Collaborations with grape and wine sector suppliers to contribute to product development
3.2 Understanding fermentation for uniqueness and improved performance	- New or enhanced yeast and bacterial germplasm to enhance winemaking processes and realise performance and economic gains, through improved fermentation efficiency and differentiation of wine products/styles - A growing and relevant AWRI Wine Microorganism Culture Collection - Improved understanding, monitoring and management of the factors involved in difficult fermentations from vineyard through to winery - An improved toolbox for creation of target wine styles

Importantly, the AWRI collaborates with the wine community to support, develop, find solutions, inform and extend the capabilities of the entire sector. Even as a small regional winemaker, I have had the opportunity to be a part of numerous trials and developments that have directly benefited my business.

— Corrina Wright, Oliver's Taranga Vineyards

Subtheme	Target outcomes
3.3 Providing objective measures of grape grading and wine style	New measures of assessing grape and wine provenance and quality for use by grapegrowers and winemakers Objective measures of premium styles and fine wine attributes Tools for in-field implementation/adoption of objective measures Targeted extension of existing objective measures to multiple audiences, including practical case studies Improved understanding of yield/quality relationships including the impact of yield on levels of desirable marker compounds Tools to determine temperature and light exposure in the bunch zone, and their impact on wine flavour
3.4 Minimising taints and faults	New and enhanced technologies to improve vineyard and winery efficiency and performance Knowledge that allows grapegrowers and winemakers to capture, enhance and preserve terroir through optimised grapegrowing and winemaking practices Improved ability to manage and mitigate wine faults and taints, such as reductive characters, closure-related taints, microbial faults and taints, and the impacts of bushfires and associated smoke taint

The AWRI are great partners, and a highly valued resource for the industry. As a result of their reach and engagement with industry they are quick to pick up on emerging issues and industry trends.

— *Damien Sheehan, Mount Langi Ghiran*

For a wine journalist, the AWRI is an invaluable resource. The Institute's ground-breaking work has provided a rich source of news stories and feature articles in the 25 years I have been writing about wine, and AWRI researchers and staff have regularly assisted me on many occasions by sharing their insight, expertise and authority.

— *Max Allen, wine columnist*

Theme 4 — Environment, sustainability and natural capital

The success of the Australian grape and wine industry is strongly tied to its long-term custodianship of the natural environment. Soil, water, biodiversity, and climate all contribute to the success or failure of grapegrowing across Australia, and electricity, fuel, refrigeration, and waste disposal are all major costs in winemaking. Projects under this theme aim to assist producers to improve environmental and economic performance; to adapt to the challenges of a variable climate; to make the most of the grapevine clonal resources available; to develop tools to verify the origin of Australian wines; and to improve management of pests and diseases.

Subtheme	Target outcomes
4.1 Adapting to climate challenges	Evaluation of climate adaptation strategies and support for their adoption to alleviate impacts of long-term warming and prolonged seasonal heat events An improved understanding in the grape and wine sector of how increased temperature, increased CO₂ and reduced water can affect grape and wine production Strategies for managing vintage compression, extreme weather events, reduced water availability and/or changing rainfall patterns and climate-related compositional changes (e.g. flavour/sugar/acid ripeness occurring at different speeds)
4.2 Improving environmental performance	Enhancement of Australia's competitive advantage through increased economic, social and environmental sustainability in the vineyard and winery Knowledge on new and better ways of growing grapes and making wines Streamlined platforms for grapegrowers and winemakers to track sustainability metrics Widespread adoption of sustainability program both to improve individual grower and winery sustainability and to communicate Australian wine's sustainability performance to the customers and consumers of Australian wine Monitoring of major natural resource metrics - water, energy, soils, fertilisers, agrochemical sprays, flora/fauna Insights into the importance of sustainability to wine customers and consumers Maximisation of reuse of vineyard waste Objective benchmarking of organic, biodynamic and conventional wines
4.3 Understanding Australia's grapevine resources	Increased understanding of how grapevine genetics interact with environment and viticultural management techniques to optimise expression of terroir A new reference genome for grapevine and sequences for key Australian varieties and clones An improved understanding of the genetic resource pool available in Australia's grapevine germplasm Progress towards an industry grapevine identification service (variety and clone)

The AWRI's excellence in research underpins the whole wine industry's brand strength and integrity. The focused innovation provided by the AWRI is vital to our export success.

— Sandy Clark, Winemakers' Federation of Australia

Subtheme	Target outcomes
4.4 Understanding grape and wine provenance and quality	New measures of assessing grape and wine provenance and quality for use by grapegrowers and winemakers Knowledge that allows grapegrowers and winemakers to capture, enhance and preserve terroir through optimised winemaking practices Better understanding of Australia's unique terroirs and how they influence wine style and quality Information on the key factors influencing Australia's unique vineyards and how those attributes can be captured, enhanced and preserved Increased knowledge on the microbiological and chemical profiles and markers of regionality Improved understanding of the importance of the human element in expressing terroir Capability to analytically determine the origin of a wine (both grape variety and place) with a high degree of confidence
4.5 Delivering effective biosecurity, pest and disease management	Provision of diagnostic protocols for high-priority plant pests to ensure the wine sector is prepared for exotic pest incursions Participation in Australia's biosecurity networks including provision of relevant technical support Improved practices for sustainable management of pests and diseases Improved strategies to prevent and manage trunk diseases Improved understanding of pest and disease resistance and management protocols

The AWRI has always been the first and only required support for the never-ending winemaking questions myself and my team have asked from the moment I started my career in winemaking. They are always at the cutting edge of the latest information and research.

— Virginia Willcock, Vasse Felix

Theme 5 — Foundational data and support services

The research, development and extension activities of the AWRI are underpinned by an efficient service capacity that provides and supports infrastructure; delivers research support and analytical services; manages governance, legal and financial affairs, information technology and workplace safety; and monitors trends in Australian wine composition and production practices.

Subtheme	Target outcomes
5.1 Providing efficient administration and management	Cost-effective and timely support services for the AWRI's research, development, extension and commercial activities including leadership, governance, finance and accounting, human resources, information technology, operations management and workplace health and safety Enhanced knowledge management systems that ensure knowledge generated throughout the AWRI is efficiently captured and available for extension
5.2 Delivering research support and accredited analytical services	Analytical services that support Wine Australia's compliance activities An efficient export certification process that supports Australian wine sector exports Analytical methods for industry and other research organisations Cost-effective and timely support services for the AWRI's research, development, extension and commercial activities including leadership, governance, finance and accounting, human resources, information technology, operations management and workplace health and safety Sensory, statistical and development support services for research projects Consulting support for bespoke projects and to support industry adoption Metabolomics and bioinformatics services for researchers and industry Specialised small-scale winemaking services for researchers and industry Support for quality assurance screening of imported wine additives
5.3 Monitoring winegrowing trends and production practices	Analytical services that support Wine Australia's compliance activities A consistent and robust dataset of the compositional trends of Australian wine Identification of trends in Australian grape and wine production

The AWRI is a quality focus for the Australian wine industry; it provides vital support and is outcome driven. In 48 years as a winemaker, I have found the AWRI a sounding board for all manner of wine quality issues, and the AWRI staff are always very knowledgeable and helpful.

— Colin Campbell, Campbells of Rutherglen



The AWRI has been one of the key partners to the Australian wine industry's success in the modern era, and the support services the AWRI offers to all levels of the industry allow Australia to compete on a global level.

— Jen Pfeiffer, Pfeiffer Wines

Through its commercial and advisory services the Australian Wine Research Institute has a strong connection directly with winemakers and viticulturists, and with this insight into arising issues has been able to foresee new areas of research, giving Australian wine quality a leading edge internationally.

— *Stephen and Prue Henschke, Henschke*

Alignment with industry and government priorities

AWRI subtheme				Wine Australia priority and/or strategy	Rural RDE priorities	Australian Government science and research priorities	National RDE framework
1.1	Improving understanding of customers and consumers	Building Australian grape and wine excellence	S3	Advanced technology	Adoption of R&D	1. Food	Nationally-relevant research and development undertaken at a world-class facility as part of a major agricultural cluster
1.2	Informing stakeholders about health and safety aspects of wine	Improving resource management and sustainability	S4				
1.3	Supporting market access, safety and regulation	Enhancing market access	S7				
1.4	Enhancing and protecting the reputation of Australian wine	Promoting Australian wine	S1				
1.5	Supporting best practice agrochemical use in Australian viticulture	Enhancing market access	S7	Soil, water and managing natural resources			
1.6	Preserving quality and integrity	Building Australian grape and wine excellence	S3				
2.1	Facilitating awareness and adoption of research outcomes	Extension and adoption	S10	Adoption of R&D	2. Soil and water	3. Transport	Applied research and development undertaken in regions with and through industry partners
2.2	Supporting stakeholder technical needs	Extension and adoption	S10				
2.3	Supporting wine industry education and development	Building capability	S8				
3.1	Improving products, processes and packaging	Building Australian grape and wine excellence	S3	Advanced technology	7. Advanced manufacturing	8. Environmental change	Proactive extension activities that meet regional and sub-regional needs
3.2	Understanding fermentation for uniqueness and improved performance	Improving winery performance	S6				
3.3	Providing objective measures of grape grading and wine style	Building Australian grape and wine excellence	S3				
3.4	Minimising taints and faults	Building Australian grape and wine excellence	S3				
4.1	Adapting to climate challenges	Improving resource management and sustainability	S4	Soil, water and managing natural resources			
4.2	Improving environmental performance	Improving resource management and sustainability	S4				
4.3	Understanding Australia's grapevine resources	Building Australian grape and wine excellence	S3				
4.4	Understanding grape and wine provenance and quality	Building Australian grape and wine excellence	S3				
4.5	Delivering effective biosecurity, pest and disease management	Improving resource management and sustainability	S4	Biosecurity			



I really enjoy working with the AWRI. My involvement with activities such as the Advanced Wine Assessment Course, One Day Wine Schools and the regional roadshows is really important for my business and a great source of inspiration for me. I encourage you to take up the opportunity to get involved - the professional and knowledgeable staff are a great support.

— Kerri Thompson, Wines by KT

About Wine Australia

The Australian Grape and Wine Authority, trading as Wine Australia, is the single Australian Government statutory service body for the Australian grape and wine community.

Wine Australia supports a prosperous Australian grape and wine community by investing in research and development,

building the international and domestic market, disseminating knowledge, encouraging adoption and protecting the reputation of Australian wine.

It is the key investor in precompetitive RDE for the Australian grape and wine sector.

About the AWRI

The Australian Wine Research Institute (AWRI) is the Australian grape and wine industry's own research organisation. It supports a sustainable and successful grape and wine industry through world-class research, practical solutions and knowledge transfer. The AWRI's activities are guided by its values of excellence, integrity and passion.

Established in 1955, the AWRI is governed and largely financed by Australia's grape and wine producers and is a member of the Wine Innovation Cluster (WIC) at the Waite Research Precinct in Adelaide.

It is a company limited by guarantee that does not have share capital – it considers its 'shareholders' to be Australian grapegrowers and wine producers. Wine grapes levy payers directly nominate and vote on the composition of the AWRI's Board and work directly with the AWRI to improve the productivity of the whole industry.

The strategic direction, plans and projects of the AWRI are contained within its constitution, its operational plan and this RDE plan.

Resourcing the plan

The projects in this plan have been proposed and/or endorsed as being priorities for investment through two industry consultations, one led by Wine Australia in the development of its strategic plan and the other led by the AWRI during development of this plan.

The RDE activities of the AWRI are primarily funded by Australian winemakers and grapegrowers through their investment body Wine Australia, with matching funding from the Australian government.

In addition, the AWRI receives investment from a range of public and private entities, much of which is for user-pays analytical services, research support services, educational activities and national infrastructure service platforms. This plan covers activities that will draw investment from a range of sources.

Project progress will be regularly monitored and reported through the AWRI website, annual reports and industry communications.

A man with short, dark hair is shown in profile, holding a wine glass to his nose and smelling the contents. He is wearing a dark sweater over a checkered shirt. In the foreground, several other wine glasses are visible on a table, slightly out of focus. The entire image has a blue tint.

Australian Vignerons recognises the AWRI as Australia's world-class provider of research and extension for our wine community. Their pursuit of excellence and commitment to service provides Australian winemakers and growers with a service that is the envy of other wine-producing countries.

— Andrew Weeks, Australian Vignerons

Facilities

The AWRI operates from purpose-built facilities at the Waite Research Precinct in Urrbrae, South Australia. The Waite is recognised as one of the world's leading agricultural research precincts, hosting 1,100 researchers and generating more than \$120 million in annual research income.

Facilities of particular relevance to the delivery of this plan include experimental vineyards, well-equipped laboratories for a range of chemical and biological research activities and small- and pilot-scale winemaking infrastructure.

Co-located with the AWRI at the Waite are the other members of the WIC, a grouping of Australia's leading grape and wine RDE

entities. WIC represents approximately two-thirds of Australia's grape and wine science capability.

Many projects in this plan will be conducted in conjunction with research facilities in other parts of Australia and overseas, and/or with industry vineyards and winery sites.

Organisational structure and capabilities

The AWRI's operational activities can be broadly grouped into four key functions:

1. Research: Fundamental and applied research into wine composition, processing, quality and sensory characteristics. Specific areas of expertise include chemistry, microbiology, molecular biology, genomics, metabolomics, bioinformatics, engineering, packaging, sensory science, spectroscopy, mass spectrometry, oenology and viticulture.

2. Development: Translating and packaging research outcomes from Australia and overseas into usable applications for adoption by grape and wine producers.

3. Extension and education: Communication to the Australian industry through a range of knowledge dissemination activities including articles in trade journals and peer-reviewed publications, the AWRI website, electronic newsletters

and bulletins, regular seminars and workshops in wine regions, webinars and technical troubleshooting services.

4. Commercial Services: Fee-for-service analytical facilities, 'market-pull' proof-of-concept studies, databases and industry service platforms, product benchmarking and technical validation, export certificates and site audits.

People who deliver

The AWRI employs and develops a range of professionals in disciplines and professions required to support the medium- to long-term needs and priorities of Australian grape and wine producers.

Originating from more than fifteen countries, they bring unique perspectives, expertise and skills to the delivery of projects in this plan.

Around two-thirds of the AWRI's employees hold a Bachelor's degree in either Science or Agricultural Science. More than a quarter hold a PhD, and just less than a quarter hold a Master of Science, Business or Commerce.

AWRI employees work closely with visiting researchers and students who also contribute towards achieving the outputs of this plan.

Full details of AWRI employees and their qualifications and experience can be found on the AWRI website.

Collaborative network

The AWRI actively collaborates with more than 100 academic and industry partners across the world, and is a founding member of the Wine Innovation Cluster. Almost all projects conducted under this plan will involve at least one collaborating organisation.

In some cases the AWRI will act as the project lead agency while in other cases the AWRI will play a supporting or facilitating role. The key aim is the conduct of RDE that delivers outcomes for industry, and collaboration will be pursued whenever it leads to a faster, more cost-effective or higher quality result.

Taking technology to the user

Research, development and extension at the AWRI are undertaken in the broader context of contributing to increased profitability and sustainability for Australia's grape and wine industry. Timely communication of results is a key priority and the intellectual property management strategy favoured by the overwhelming majority of the Australian wine community is rapid dissemination and adoption. This principle is captured within the intellectual property policy of the Winemakers' Federation of Australia.

Wherever possible, the AWRI favours timely and tailored extension through a combination of peer-reviewed and industry publications, scientific conferences, industry-focused extension activities and electronic media. Every effort is made to ensure that the Australian industry gains maximum benefit from research outputs even within an environment of open international communication.

Formal intellectual property protection and commercialisation are undertaken only when a compelling case can be made that this strategy will result in faster, fairer or better outcomes for the Australian wine industry. Past examples where this approach has been taken include the commercialisation of novel yeast strains, the availability of complex new analytical methods via commercial laboratories and new applications of spectroscopy.

AWRI Commercial Services provides fee-for-service activities designed to assist individual producers to access and adopt analytical methods, technologies and knowledge. More than 100,000 analyses are conducted each year, allowing regulatory requirements to be met for a large proportion of Australia's exported wine, supporting informed decision-making and continually growing a very powerful compositional database.

Acknowledgements

The AWRI extends its thanks to the many industry practitioners and industry body representatives who participated in the consultation that supported the development of both this RDE plan and the Wine Australia strategic plan with which it aligns. It also gratefully acknowledges

the guidance of the AWRI Board and the Board and management of Wine Australia in the further development of the plan, and the staff of the AWRI for their efforts in formulating, developing and refining the themes, subthemes and projects.



The AWRI is an ever-present, outstanding resource for our business and the whole industry, with easy to access, up-to-date, and always relevant information on hand.

— David Bicknell, Oakridge Wines

The AWRI has been a great resource for our business for more than 60 years. Through their R&D programs, education and support services they are a key partner for the Australian wine industry for the next 60 and beyond.

— *Jeff McWilliam, McWilliams Wines*

The AWRI is recognised and respected internationally for the research they deliver and also for their technical capability across all key facets of wine - grape to consumer; and the value of that to the Australian wine industry cannot be overstated.

— *Kate Lattey, Pernod Ricard Winemakers*

The AWRI's staff are great collaborators and working with them, from trial design to implementation, is a real partnership. Between us, we've been able to find answers to many questions, continually building on our knowledge and understanding.

— *Alex Sas, Accolade Wines*

The AWRI has always been a great partner and is an integral part of the industry, and their new research plan demonstrates how in-tune and responsive they are to the industry's changing priorities.

— *Chester Osborn, d'Arenberg*

For a long time - you could say decades - our people have interacted with the AWRI across a large range of activities, and the value of that resource when multiplied across the entire industry, is huge.

— *Andrew Hardy, Petaluma*

The AWRI is an integral part of the Australian wine industry, with an unrivalled breadth and depth of knowledge and expertise.

— *Darren DeBortoli, DeBortoli Wines*

Whether through ongoing ‘improvement of the breed’ wine science or responding to an emergency, the AWRI has been pivotal in helping our family winery and the Australian wine fraternity make great wine and be taken seriously as competitive players on the world stage.

— Robert Hill-Smith, Yalumba

For me, the AWRI has made a fundamental contribution to the Australian wine industry through its topical and cutting-edge research that responds to the fluidity of growing and making wine. It maintains its value to all facets of the industry through innovation and listening to what we need.

— Clare Halloran, TarraWarra Estate

The AWRI is remarkably close to Australian winemakers so the link or conduit between research and industry uptake is fast and direct. I know of no other wine research organisation in the world which is so effective in this regard.

— Michael Hill-Smith, AM MW, Shaw + Smith

The AWRI has always provided excellence in research and extension and the revised plan is well suited to meet the requirements of our dynamic and changing industry.

— Jeremy Dineen, Josef Chromy Wines

The importance of the role played by the AWRI in the development of the modern Australian wine industry cannot be overstated.

— James Halliday, Halliday Wine Writing

It’s solid reassurance for Australian winemakers, to know that we have the AWRI to cover our back with its technical knowledge, innovation and problem-solving capabilities.

— Reid Bosward, Kaesler Wines



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